

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Janet Hood (Reg. #61,142) on April 1, 2010.

The application has been amended as follows:

IN THE CLAIMS:

Claim 8 has been changed to read as follows:

8. (currently amended) A turbine rotor shaft, comprising:
a middle region consisting of a middle bloc, having a middle region material and a longitudinal axis and having a first end face oriented perpendicular to the longitudinal axis and arranged at ~~an~~ a first end of the middle region and a second end face arranged at a second end of the middle region opposite the first end face;
a first outer region consisting of a first bloc, having a first material and arranged coaxially with the longitudinal axis abutting the first end face of the middle region, comprising a first bearing surface configured to receive a first bearing which mounts the first outer region to the turbine, wherein when disposed in a steam turbine the first outer region abuts the first end face of the middle region upstream of a last row of blades and downstream of a first row of blades within a high pressure part of the steam turbine; and

a second outer region consisting of a second bloc, having a second material and arranged coaxially with the longitudinal axis and abutting the second end face of the middle region, comprising a second bearing surface configured to receive a second bearing which mounts the second outer region to the turbine,

wherein the middle region material has a higher heat resistance than the first and second materials.

Claim 14 has been changed to read as follows:

14. (currently amended) A method for manufacturing a turbine shaft, comprising:

producing a first outer region from a first bloc of a material that is less heat-resistant than ~~the~~ middle region material, the first outer region comprising a first bearing surface configured to receive a first bearing which mounts the first outer region to a turbine, and further configured to, when disposed in a steam turbine, abut the middle region upstream of a last row of blades and downstream of a first row of blades within a high pressure part of the steam turbine;

producing a second outer region from a second bloc of a material that is less heat-resistant than the middle region material, the second outer region comprising a second bearing surface configured to receive a second bearing which mounts the second outer region to the turbine; and

welding the first and second outer regions to opposite ends of the middle region.

Claim 15 has been changed to read as follows:

15. (currently amended) A steam turbine, comprising:

a turbine shaft arranged coaxial with a rotational axis of the turbine wherein the shaft has a middle region consisting of a middle bloc, having a middle region material and first and second end faces oriented perpendicular to the longitudinal axis of the shaft arranged at opposite ends of the middle region,

a first outer region consisting of a first bloc, the first outer region comprising a first bearing surface configured to receive a first bearing which mounts the first outer region to a turbine, wherein when disposed in a steam turbine the first outer region abuts the first end face of the middle region upstream of a last row of blades and downstream of a first row of blades within a high pressure part of the steam turbine, the first outer region having a first material and arranged coaxially with the longitudinal axis abutting the first end face of the middle region, and

a second outer region consisting of a second bloc, the second outer region comprising a second bearing surface configured to receive a second bearing which mounts the second outer region to the turbine, the second outer region having a second material and arranged coaxially with the longitudinal axis and abutting the second end face of the middle region wherein the middle region material has a higher heat resistance than the first and second materials;

a plurality of blades attached to the first outer and second outer regions of the turbine shaft;

an inner casing surrounding the turbine shaft;

a plurality of vanes attached to an inner surface of the inner casing; and
an outer casing that surrounds the inner casing.

The above changes to claims 8, 14 and 15 have been made to make it clear that the first outer region abuts the first end face of the middle region upstream of a last row of blades and downstream of a first row of blades within a high pressure part of the steam turbine and to correct typographical errors.

REASONS FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: The instant invention is deemed to be an unobvious improvement over the invention patented in USP 6,152,697 (Konishi et al. hereinafter). The improvement a first outer region consisting of a first bloc, having a first material and arranged coaxially with the longitudinal axis abutting the first end face of the middle region, comprising a first bearing surface configured to receive a first bearing which mounts the first outer region to the turbine, wherein when disposed in a steam turbine the first outer region abuts the first end face of the middle region upstream of a last row of blades and downstream of a first row of blades within a high pressure part of the steam turbine. In particular, Konishi et al. do not disclose that where the first region and middle region meet is upstream of a last row of blades and downstream of a first row of blades within a high pressure part of the steam turbine

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron R. Eastman whose telephone number is (571)270-3132. The examiner can normally be reached on Mon-Thu 9:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aaron R. Eastman/
Examiner, Art Unit 3745

/Edward K. Look/
Supervisory Patent Examiner, Art Unit 3745

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